SHORT COMMUNICATION

Evaluation of Garden Pea Genotypes for Yield and Screening against Downy Mildew Incidence under Mid Hill Conditions of Jammu Region

Anil Bhushan, B Singh, AK Singh and Anjani Kr Singh

Regional Agricultural Research Station, Rajouri, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu-180 009, Jammu and Kashmir

(Received: 7 June 2012; Revised: 12 December 2012; Accepted: 10 January 2013)

Downy mildew caused by [*Peronospora viciae* (Berk.) Casp.] is one of the most prevalent disease of garden pea and under mid hill conditions of Jammu region downy mildew causes severe economic losses to farmers. Twenty genotypes of garden pea were evaluated and screened against downy mildew disease at RARS, Rajouri, SKUAST-Jammu during *rabi* seasons of 2007-08 and 2008-09. Based on the results obtained from pooled data of two years, all the genotypes were grouped into five groups (Group I, II, III, IV and V). Among all the genotypes, P-89 was found to be the most suitable genotype with minimum downy mildew incidence (10.3%) and highest yield (217.5 q/ha) under mid hill conditions.

Key Words: Downy mildew, Garden pea, *Peronospora viciae*

Garden pea (*Pisum sativum* L.) is one of the foremost vegetable crops of the Jammu region. It is cultivated in 2300 hectare area with production of 20700 metric tonnes (Anonymous, 2009). Out of the total area under pea crop, majority area lies in mid hill zone comprising of Rajouri, Poonch, Bhaderwah, Kishtwar and Udhampur districts which is highly conducive for pea cultivation. However, in the recent past due to heavy yield losses in the prevalent pea cultivars and their susceptibility to the downy mildew disease [(*Peronospora viciae* (Berk.) Casp.] caused havoc amongst the vegetable growers of the region. Therefore, the present study was undertaken to find out new high yielding and downy mildew tolerant cultivars and in mitigating the problems of pea growers in this region.

The experiment was conducted during *rabi* season of 2007-08 and 2008-09 at research farm of SKUAST Regional Agricultural Research Station, Rajouri, Jammu. The soil of the experimental field was clay in texture with 196.5 kg/ha available N, 8.1 kg/ha P_2O_5, 124 kg/ha available K_2O and having a pH of 7.67. The experiment was laid out in randomized block design (RBD) having 20 treatments, each replicated thrice. The treatments comprised of twenty varieties of pea namely, CPS-05-01, CPS-05-02, CPS-05-03, CPS-05-04, CPS-05-05, AP-3, Palam priya, Arkel, VL-9, VL-8, E-8, AP-1, Early Gaint, Bonnevillae, Pusa Pragati, DMR-7, DDR-23, DDR-27, P-89 and DDR-55. Each variety is sown in a plot of size 3m X 1.5m at spacing of 40x20 cm. The fertilizer is applied at recommended dose of 50, 60 and 50 kg nitrogen, phosphorous and potassium per hectare. All the cultural operations were carried out uniformly in all the treatments as per package of practices recommended by SKUAST-Jammu (Anonymous, 2009). Observations on plant height, number of branches/plant, number of nodules /plant, number of pods/plant and pod weight/plant were recorded from five randomly selected plants in each plot whereas data on days to 50% flowering, average yield and downy mildew incidence were recorded on whole plot basis (Davidson *et al.*, 2011). The two year data was pooled and statistically analyzed following standard procedure (Snedecor and Cochran, 1967).

Perusal of pooled data for two years revealed superiority of P-89 among all the genotypes used in the study (Table 1). The overall superiority of P-89 was expressed in terms of high values of other yield contributing characters *viz.*, number of branches/plant (3.4), number of nodules/plant (63.1), number of pods/plant (31.3), and pod weight (198.3).The significant difference in terms of green pod yield was observed in P-89 (217.5 q/ha), CPS-05-03 (205.7 q/ha), Palam Priya (201.9 q/ha), AP-1 (193.2 q/ha) and was 31.4%, 24.3%, 22.0% and 16.7% respectively, higher than check cultivar Bonneville(165.5 q/ha). All the other

*Author for Correspondence: E-mail: anilbhusan2008@gmail.com

Table 1. Incidence of downy mildew and agronomic traits of different genotypes of garden pea under mid hill conditions of Jammu region (pooled data for 2007-08 and 2008-09)

Genotype	Plant height (cm)	No. of branches/ plant	No. of nodules/ plant	No. of pods/ plant	Pod weight/ plant (g)	Days to 50% flowering	Yield/ha (q)	Downy mildew incidence (%)
CPS-05-01	151.6	4.2	52.8	36.5	135.3	80.3	166.1	10.5
CPS-05-02	101.4	3.4	30.4	29.5	115.1	84.7	192.0	17.7
CPS-05-04	92.3	2.8	61.2	30.5	102.1	83.2	175.9	17.0
CPS-05-05	108.3	3.0	42.8	27.9	138.3	80.2	182.4	13.5
CPS-05-03	112.2	4.3	63.5	48.5	153.9	81.7	205.7	15.7
AP-3	78.5	1.7	40.4	15.6	81.2	62.7	170.3	15.5
Palam Priya	86.3	3.0	77.1	40.7	130.1	81.8	201.9	17.2
Arkel	92.4	2.8	74.3	25.8	91.4	70.5	223.8	11.8
VL-9	105.6	2.9	49.7	19.5	87.2	73.8	182.6	14.5
E-6	70.7	2.1	42.9	25.4	71.9	60.2	187.3	11.9
VL-8	87.4	2.8	49.3	38.9	72.1	78.3	158.3	15.3
AP-1	93.2	3.6	65.0	45.8	141.0	78.8	193.2	14.5
Early Gaint	194.6	3.2	30.2	30.1	164.3	77.5	102.9	17.8
Bonneville	91.4	3.0	46.0	38.0	120.9	69.2	165.5	12.5
Pusa Pragati	84.1	2.4	48.9	19.9	89.2	74.8	131.4	10.5
DMR-7	144.5	3.2	60.5	26.3	120.5	80.5	102.6	13.0
DDR-23	95.6	3.7	67.7	32.0	122.3	67.7	118.3	15.2
DDR-27	81.5	2.4	39.0	17.3	83.0	74.7	114.9	13.2
P-89	77.3	3.4	63.1	31.3	198.3	75.0	217.5	10.3
DDR-55	69.8	2.0	41.7	13.4	45.3	87.3	70.3	13.8
CD (0.05)	14.72	0.66	7.47	6.07	12.98	8.37	10.4	1.46

genotypes performed poor in term of yield as compared to Bonneville. However, based on the parameter of earliness of flowering measured in terms of days to 50% flowering in genotype E-6 (60.2 days) followed by CPS-05-03 (62.7 days) and DDR-23 (67.7days) were recorded to be the mature significantly early when compared with check Bonneville (69.2days) whereas non significant differences were observed in P-89 (75 days) when compared with Bonneville for earliness.

Based on the two year pooled data presented in Table 1, it was revealed that significant variation was present among different genotypes regarding downy mildew incidence. All the genotypes exhibit varying degree of disease incidence ranging from 10.3% (P-89) to 17.8% (Early Giant). Based on the percentage disease incidence, all the genotypes were classified into five groups (Group I, II, III, IV, and V) (Table 2). Group I comprised of P-89, CPS-05-01, Pusa Pragati, Arkel, E-6 and Bonneville were found to be least susceptible to downy mildew (10.3-12.5%). Group II consisting four genotypes (CPS-05-05, DMR-7, DDR-27 and DDR-55) recorded downy mildew incidence between 13.0-13.8%. Similarly Group III (AP-3, VL-9, VL-8, AP-1 and DDR-23) and Group IV (CPS-05-03 and CPS-05-04) recorded disease incidence of 14.5-15.5% and 15.7-17.0%, respectively, where as Group V (CPS-05-02, Palam Priya and Early giant) exhibited maximum disease incidence (17.2-17.8%).

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